cf - where is your voice in this?

Technical Department Proposal

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by:

Introduction

The WELL's marketability and profitability have only just begun to scratch the surface of their potentials. Over the next several years, it is not unthinkable that The WELL may double, triple or even quadruple its user base -- provided it is able to supply access in relation to increasing demand. In the longer term, as The WELL expands its accessibility, service, and functionality at the local, national and international levels, its usership could realistically grow into the tens of thousands.

Because of The WELL's crucial reliance on technology to offer its most fundamental level of services -- the ability of users to reliably connect to The WELL and make use of its primary product, online interaction -- The WELL's ability to compete in the telecommunications marketplace; to expand its usership, its income and role in the telecommunications field; to maintain current services -- even its ability to survive, at all, as a business -- all rest, in no small measure, on the critical capabilities of its technical equipment and personnel, without which it would have no services for which to bill, no markets to tap, nor any organization to manage.

For these reasons, it is hardly possible to overstate the importance to The WELL of the creation and ongoing maintenance of a well-managed, adequately funded and staffed Technical Department which is both responsive to and communicative with top-level management; which operates within clearly defined departmental boundaries; which is coordinated with related departments; which proceeds towards its goals in an orderly, well-considered fashion; which generates, for evaluation by top-level management, proposals and strategies for maintenance and expansion; and which presents, on a regular basis, concise appraisals of its progress and needs. In addition, it is imperative that The WELL's Technical Department management shares the same concerns for maximizing service to The WELL's usership with its Director, top-level management, and Board of Directors.

To these ends, the following is submitted to serve the dual purposes of proposing a general job description for a new position of "Technical Manager" and outlining the organizational boundaries and procedures of a well defined Technical Department. Taken all at once, the goals described below may sound ambitious, particularly in those areas in which additional personnel may be necessary for effective implementation. But properly prioritized and implemented by degrees, over time, the achievement of these goals can form the cornerstone of a smoothly operating and profitable WELL, capable of expansion as needs and means arise, without requiring the constant attention and supervision of The WELL's top-level management which has goals of a broader import to accomplish.

Departmental Guidelines

This proposal is not a detailed departmental guideline but an overview of the organizational needs and requirements of a new WELL Technical Department. A full, Departmental Guideline to include specific goals, procedures and projected timelines should be developed by the Technical Manager and submitted to senior WELL management for evaluation and approval prior to broad, directional decision-making and implementations during the first stages of re-organization.

Departmental Goals

Access to The WELL

Every Technical Department goal falls, ultimately, under one broad category: Maximizing Service to The WELL's users.

It should be the goal of The WELL's Technical Department to provide online access commensurate with demand. A login prompt is, to The WELL, the same as an open front door is to any business. It should be wide enough to accommodate the maximum expected traffic during its busiest hours, since that is when The WELL will make the bulk of its money, but not so wide as to be wasteful. The goal should be "No busy signals, No problems" for users wishing to logon. Such a goal necessitates awareness of the fact that off-peak hours will not (and should not be expected to) make maximum use of The WELL's facilities.

Access should be simple. The goal, here, is ultimately to provide either a single phone number by which anyone, with any standard modem equipment, can call and get a good connection, or regional local access phone numbers over which users in any area can connect via a local call. Specifically to be avoided is the issuance to users of a multitude of changing phone numbers, resulting in confusion and frustration.

X.25 packet switching alternatives to direct Bay Area dialup numbers should be fully researched and evaluated for possible installation since a well-operated X.25 service (similar to CPN) would solve port limitations and possibly decrease instances of line noise on connections in Bay Area locations. The limitation on the maximum number of ports on The WELL's Sequent is a severe user access barrier for WELL users in the Bay Area since there is no flexibility in the number of lines available to dial into. By contrast, X.25 packet switching technology allows multiple users to effectively come in over a single line, providing much greater access and typically cleaner connections than direct dialup connections.

Communications hardware configurations should be carefully evaluated prior to purchase/installation for ease of use, connectivity and maintenance. The WELL has a long way to go in this area, at present. Achieving these goals should be considered a system-wide endeavor requiring research, evaluation, planning and gradual, systematic implementation.

Regularity of Operations

Regularity of operations should be clearly established and maintained without constant, frivolous changes to backup times or other interruptions in service. On a regular but infrequent basis, The WELL should plan to be down for testing and maintenance (other than backups), perhaps once a month during off-peak hours to allow for orderly scheduling of operations which can only be conducted when the system is down. To avoid confusion, all scheduled down times should take place as announced, whether or not they are found to be needed when those times arrive. Automated backups should be designed for minimum downtime and monitored periodically for conformance with their schedules. The ultimate goal is for users to know when to expect The WELL to be down without constant need of checking for schedule update messages.

Hardware Aging & Reliability

System hardware should be evaluated on a regular basis for reliability, and aging hardware should be replaced in a timely fashion to avoid predictable failures resulting in unscheduled system down time and user inconvenience.

Disc Space

The WELL needs to provide adequate disc space for a growing user base. After access and regularity of operations, this is a high priority item. It has become a hallmark of WELL operations in the past to complain to its hosts and usership of disc space "crunches". While ongoing efforts at disc space management by hosts, in particular, should be maintained in a reasonable degree, the notion that disc space is not a priority item because a.) it is too expensive, and b.) disc usage will always increase to fill available space, should not form the basis of a Technical Department policy.

It is a predictable and necessary requirement of any healthy and expanding business in The WELL's field that periodic upgrades in disc capacity will be required as more users register, have home directories created for them, make reasonable use of their home directories, and participate in conferencing and email. A carefully researched schedule for disc space upgrades over the course of several years should be created, reviewed and implemented in a timely fashion as a necessary component of The WELL's projected expansion.

System Performance

System performance (in user-perceivable terms) should be monitored on an ongoing basis and evaluated for planning purposes well in advance of operating system upgrades and hardware upgrades. Upgrade paths should be carefully researched, reviewed and collaboratively evaluated by management at the Technical, Support/PR and Senior levels to avoid unnecessary or premature expenditures and redundancy.

System Maintenance

The basic operations of The WELL's equipment on a day-to-day basis should not require the full-time presence of technical communications and hardware specialists. Modems, phone equipment, discs and other components, as well as the system of their interconnections, should be designed and configured in such a way that they are stable and maintainable by System Administration and other Technical Department personnel. Simple trouble-shooting procedures not requiring re-wiring, electronics repair, or major equipment installation should be researched, if necessary, documented, and implemented by the Technical Department so that non-experts can perform routine and predictable system maintenance and minor repair tasks.

Service contracts should go, whenever possible, to the most competent and professional services and individuals available within reasonable budgetary constraints. This is not the place to cut corners on expenses if reliable service to The WELL's customers is to be obtained.

Options regarding contracting vs. hiring of technical hardware design and maintenance persons, as well as system programmers, need to be researched and evaluated.

In such cases where system component failures are predictable and expected (such as modem failures), adequate backup units should be purchased, tested and ready for emergencies. All staff-maintainable equipment configurations should be clearly labeled for identification and trouble-shooting, documentation should be kept handy in a well-organized, accessible location, and maintenance/repair service names and phone numbers should be posted near the equipment to which they apply. Clearly-written procedures for handling the most common types of likely emergencies should be developed and made easily accessible.

Critical equipment in the Sequent Room which is either dangerous or susceptible to accidents involving interruptions in service should be adequately protected and labelled.

Software and data backup tapes should be clearly labelled, organized, and stored in duplicate form both on- and offsite. A strategy for testing reliability of backups should be researched, evaluated, and implemented if possible.

Fire, theft, earthquake, etc., insurance should be maintained and periodically reviewed for current status and adequate coverage.

Initial re-organization of the Technical Department should include a full review of all equipment service contracts and warrantees. Down-time estimates on equipment components should be obtained from service providers in advance of the necessity of their use.

Departmental Reports

Each week, the Technical Manager should apprise senior WELL management of the state of The WELL's Technical Department, either in person or via written report. This report will include descriptions of general operations, any problems or concerns, progress made on various projects, and any other weekly information the senior WELL management desires to know.

Budget

The Technical Manager should consult with The WELL's Director for quarterly available budget figures within which the Technical Department can expect to operate. An itemized Technical Department Budget, based on available funds, should be developed and implemented, to include such categories as:

Staff Salaries
Consultant Fees
Programming Contracts
Hardware Contracts
Maintenance Contracts
Major Equipment & Software Purchases
Office Supplies & Equipment
Travel Expenses (if any)
Connectivity Expenses (if any) -- i.e., tech staff Internet access
Miscellaneous Expenses

Personnel

As The WELL's usership expands, so will its personnel requirements. In collaboration with The WELL's senior management, initial personnel needs must be evaluated, then reviewed on a quarterly basis. Implementation of such evaluations should not be taken to indicate, necessarily, quarterly expansion of personnel, but rather an ongoing appraisal of The WELL's technical personnel needs. The WELL should expect and prepare to allocate funds for additional personnel in relation to its growth over time.

The Technical Manager should research and report on what dollar amounts represent competitive salaries in the fields in which The WELL needs to hire competent technical staff. Senior management and board members should be apprised of the fact that personnel is a necessary, though sometimes difficult to quantify, category of investment/expense without adequate funding of which The WELL cannot expect to function competitively in the telecom marketplace.

By the same token, The WELL has a unique degree of access to volunteer and online comp-time resources which should be exploited to the mutual benefit of all concerned in the area of small projects and for the development of potential future staff. It is in The WELL's best interest to see to it that persons offering their talents at low-cost, for comp-time, or by any other arrangement are treated fairly in terms of remuneration. The performance of such persons should be evaluated in the same terms as regular personnel and files kept detailing arrangements and contributions. Doing so will both protect The WELL from unproductive associations and aid in the development of a network of available talent and contacts with the broader technical fields outside the domain of The WELL.

The WELL should consider, as well, implementation of a Technical Internship Program, perhaps with UC Berkeley and Stanford University, for potential development of human resources and to enhance its profile among talented young graduates in the computer technologies.

Purchasing

All small purchase requests should be submitted by Technical Department personnel in writing to the Technical Manager, and should require written approval. Major Technical Department purchase requests should be submitted by the Technical Manager to senior WELL management for written approval.

Standard purchase proposal forms should be created to include, at least, the following information:

Origination: Name/Dept of Person Proposing
Date of Proposal
Project Name
Item description
Price
Vendor/Contact
Delivery Date
Project ETA
Need Assessment (per maximizing service to customers)

Technical Department Purviews

The Technical Department and Public Relations

It should not be within the purview of the Technical Department to issue statements to the WELL's usership regarding the status of the system. Such statements should go through The WELL's PR or Support departments for issuance, by them, to the usership.

By the same token, it should be the technical department's responsibility to keep the WELL's PR and Support departments current and well-advised of existing problems, what information would be most helpful to users, and estimates, whenever possible, of how long any problem is expected to exist.

Trouble reports entered by users into public conference topics should be regularly perused by technical staff, but responses and problem apprisals should be made by PR or Support staff to effect the dual purpose of 1). ensuring that users are treated properly and shown that their concerns are being listened to and taken seriously, and 2). allowing technical staff to concentrate on solutions to problems which arise, rather than being required to divide their time between finding solutions and fulfilling a PR role at the same time.

Technical difficulties, if/when they occur, should not be hashed-out in public by the technical staff by way of explanation or technical problem solving. Again, the PR or Support departments should politely apprise users of technical difficulties only in as much detail as is useful for users to know. The key to user satisfaction in this area is smooth operation, not endless explanations of difficulties, and it is this former goal to which the technical staff should devote its energies. The obverse of this approach undermines, rather than bolsters, general user confidence in The WELL since lengthy explanations should not, from the user's point of view, be necessary. Either the system is operating as it should be, or there is a problem which the technical staff should solve as quickly and efficiently as possible.

If/when the technical staff has a need to consult knowledgeable users for advice, it should be done via email, phone or possibly an ad hoc private conference with specific invitees for the purpose of sharing technical opinions on a particular, clearly defined, technical subject area.

The Technical Department and User Support

The Customer is the #1 priority!

In the past, The WELL's technical staff has offered significant instructional and support services to The WELL's usership both in conferences and email. The rationale for these services has been that no one knows as much about The WELL's software and technical support issues as the technical staff, itself. However, as The WELL's usership increases, such services will represent an increasing time burden on the technical staff, taking time away from system maintenance, development and problem solving tasks to which it must properly devote its concentration if an efficiently run, technically competitive system is to be offered to The WELL's users.

By dividing its energies between support and technical services, neither area is well served and the end result is user inconvenience. Users must either wait in queue for technical staff to be able to get to their questions or the technical staff must stop work on technical maintenance, problem solving and development to provide user support. Nonetheless, it remains true that no one on The WELL Staff knows the ins and outs of technical matters and program support so well as the technical staff. Therefore, the technical staff has an obligation to provide technical assistance to The WELL's usership via the User Support staff.

To this end, The WELL should continue to develop and expand a separate, robust User Support Department whose primary function it is to give users support in the form of documentation, voice and online assistance, and to maintain coordination with the Technical Department on interface design and improvements. Such an expanded Support Department need not be comprised entirely of regular WELL Staff members, but may be some combination of Staffers and knowledgeable users, both of whom attend regular face-to-face training sessions conducted by members of The WELL's technical staff.

It is in The WELL's interest to ensure that the User Support Department is adequately funded, staffed and trained so that it can continue to offer the best user support possible as The WELL's user base increases.

Finally, it is of paramount importance that standard procedures be established for communications between the Technical Department and the Support Department. Such procedures must be the result of close collaboration between the departments' managers.

The Technical Department and WELL Policy

It should not be within the purview of the Technical Department to make its own decisions in matters, however technical, which bear directly upon existing WELL policy or seek to implement new WELL policies. Further, any decision which limits, diminishes, or otherwise restricts access to online WELL facilities previously available to all users, except in cases where such restrictions may be necessary on a temporary or emergency basis, must be approved by senior WELL management prior to implementation.

Personnel & Contracted Projects

The Hierarchy of authority in the Technical Department should be clearly established and made known to each member of the technical staff. Each staff member should have a written contract specifying the conditions, job description, benefits, and pay for the position. Contracted projects should also be in written form specifying all conditions of the contractual agreement.

Technical staff personnel should be given performance reviews on an annual or semi-annual basis.

Position Descriptions

Technical Manager: A fulltime, onsite position. The Technical Manager, in the broadest terms, is responsible for working with and through other people to accomplish the objectives of The WELL as set forward by its Director and Board. Excellent communication skills are a top priority requirement for anyone in this position. The Technical Manager must be fluent in the language of technicians as well as the language of English -- two languages which are frequently very different -- providing a crucial bridge between top-level management, related departments, and the technical data upon which important decisions for The WELL must often be based.

The Technical Manager must be someone in whose judgment Senior Management has firm confidence, with whom it can easily communicate, and who possesses a collaborative, rather than an adversarial, spirit toward Senior Management, other departments, and the organization as a whole. He/she must possess a disposition which is consonant with the rest of the staff and, in the broadest terms, must be a team player.

The WELL's Technical Manager must understand what The WELL is about, inside and out. He/she must appreciate The WELL's concerns for customer service, have a sound understanding of how The WELL operates as a business, its unique qualities, and its position, potentials and limitations in the broader world of online telecommunications.

Because of The WELL's crucial reliance on technology for both its product and operations, without sound, dedicated technical management, The WELL has always run the risk of having its technicians, on whom it so heavily depends, assume too much organizational control -- which is like having the engine room steer the ship. Because of their high degree of expertise and often seemingly magical solutions to technical problems, technical personnel can be intimidating to non-technically oriented management. For this reason, while the Technical Manager needn't be an expert technician, he/she should possess enough technical knowledge to be able to understand, question, and make informed decisions based on technical information and opinions offered by his/her technical staff. In addition, the Technical Manager must keep abreast of current developments in the telecommunications field which may have significant bearing on future directions and decisions. A sound understanding of UNIX is a must and C programming experience in a UNIX environment is desirable.

The responsibilities of Technical Manager fall into these broad categories: planning, organizing, staffing, coordinating, motivating, leading, controlling, and getting results effectively through others by process of delegation. More specifically, the Technical Manager should:

Maintain close collaboration with Senior Management
Establish & Maintain Departmental Procedures
Work within Department Budget
Contract/hire/fire technical personnel
Provide weekly briefings to senior management
Research future technical expansions
Plan hardware/software maintenance and upgrades
Establish best possible rapport with vendors & service providers
Build & maintain network of human technical resources
Manage & Evaluate hardware/software projects
Maintain close collaboration with Support & PR Departments
Participate in board, fund-raising, and PR presentations.
Train Core Support Staff
Manage Production of Staff Technical Manual

Initial Resources Needed by the Technical Manager

Authority to carry out responsibilities
Adequate budget
Senior management collaboration
Adequate time for initial department re-organization

Salary, Benefits, etc.

Written employment contract to include:
Starting salary: $45K
Moving Expenses (if applicable)
Annual or Semi-annual performance review
Annual raises (to be negotiated)
Standard WELL benefits & paid vacations
Minimum two-week severance pay
Conditions for termination of contract by either party

<u>System Administrator</u>: A fulltime, onsite position. The System Administrator must be a reliable, experienced UNIX user and problem solver. Traditionally, UNIX system administrators are responsible for:

System startup and shutdown
File system backup and file recovery
Maintenance of file system integrity and free space
Changing configuration files for:
    Adding or removing user accounts
    Activating/deactivating access ports
    Setting up and maintaining communications
    Startup and shutdown scripts
    Setting up files to run commands at selected times
Monitoring system accounting and activity
Reading root's mail
Answering user-support UNIX questions
Establishing and maintaining security
Installing hardware and software
Purchasing supplies and new equipment

Correcting (system) errors and problems

(Source: UNIX Administration Guide for System V, by Thomas & Farrow)

Staff Programmer: A fulltime position, not necessarily onsite. The WELL has an almost endless need for the development of programmed utilities for users and system administration tasks. While many user utilities can be produced by knowledgeable UNIX programmers who are current users on The WELL in trade for connect time or reasonably cheap pay, programmed system administration tasks are often more complex and critical, requiring a programmer of greater experience. The C code for The WELL's most heavily used software, Picospan, is large, complex and obtuse, requiring considerable familiarity before modifications can be made by an experienced programmer. While Picospan is aging, and the search for more current conferencing software is on, it remains one of the best online conferencing tools in use, and until something better comes along, it needs maintenance and modifications, particularly in the accounting area.

Regardless of which conferencing software The WELL may eventually use, a competent, experienced UNIX programmer should be considered an important element of The WELL's Technical Department, and personnel funds should be allocated for this position as a matter of course when such funds become available.

Contracted Projects: As mentioned in the System Maintenance description above, the basic operations of The WELL's equipment on a day-to-day basis should not require the full-time onsite presence of technical communications and hardware specialists. The Technical Manager should develop and maintain a network of human technical resources, and should contract for specific, clearly defined jobs which are beyond the scope and expertise of The WELL's onsite technical staff. In particular, certain technical talent should be contracted for on-call service in the event of emergencies. Some expense for the maintenance of such contracts should be expected even if the services, themselves, are rarely used.

For a system the size of The WELL, certain tasks traditionally relegated to the System Administrator might also best be contracted for on-call maintenance, not necessarily with a single person or company. Depending on the strengths and weaknesses of any given System Administrator/Staff Programmer, The WELL may need to contract for installation and maintenance of various hardware components, systems integration, Internet/UUCP configurations, X.25 modifications, etc.

The WELL has not always had good experiences with contracted services. A good example of a contract that didn't work well was "Getwell" -- and we know why it didn't work. In the simplest terms, we bought what was, essentially, a black box. There are ways to avoid contracting for black boxes, both hardware and software, and we need to learn more about what those ways are before we embark on future contracts. We should bring in experienced consultants to educate us in this area so we can approach it with a reasonable expectation of success -- before we spend big dollars.

Before we approach any potentially expensive contracted project, we need to thoroughly assess whether there are alternative strategies which may accomplish satisfactory results faster and more cheaply.

In the area of software development, we need close coordination and collaboration between our PR, Support, and Technical departments to ensure that software written for The WELL, however the arrangements for its development are made, is of a design and functionality which improves the

online interactivities of our users, rather than obfuscating or complicating things, or worse, pestering our users unnecessarily or limiting their functionality without good reason.

At the WELL Director's discretion, the Technical Department may be required to submit for approval all proposed contracts and projects prior to commencement. At the very least, all such arrangements must be approved by the Technical Manager prior to action.

Vendors

The WELL has the right, as a corporate customer, to expect and demand satisfactory service from its equipment vendors. At the same time, every effort should be made to establish and maintain amicable and productive professional relationships with contacts within vendor and service companies whenever possible.

Additional vendor alternatives should be a matter of ongoing research.

IMMEDIATE PRIORITIES

Evaluate State of The System

Stabilize System for Functionality given current equipment

Evaluate and Reorganize Sequent Room if necessary after shibumi's departure
- Condition of Modems
- Wiring & labelling
- Tape Storage
- Tool box and cabinet

Evaluate Sequent Room Environment
- Adequate safeties on disc panel switches
- Air Conditioning
- Modem ventilation
- Space considerations

Evaluate State of Office Equipment & Make Recommendations as Necessary.
- Do Staff members have the equipment they need?
- Is it in working order?
- If not, evaluate repair vs. replacement

Assemble and Organize all Hardware Documentation

Review and/or Organize all Vendor Information

Review all Service Agreements

Re-establish all Important Vendor Contacts with new WELL technical personnel.

Research PPS and any other possible X.25 local access alternatives
Evaluate, in conjunction with X.25 research, modem/connection alternatives.

Rescind or Reconfigure Quotas program per Evaluation of Disc Overflow Safety Options.

Examine and Evaluate Backup System & Strategy

PENDING

Upgrade 64-user license limit
Evaluate timing for Sequent Upgrade
Evaluate Disc Storage
Evaluate vt100 default
Evaluate security umask default

Programs:

Evaluate newuser program for possible revisions
Research possible WELL-wide, voluntary "yellow pages" program
Evaluate plans for cfinfo program

The Internet:

Evaluate plans for Internet connection
Evaluate pluses and minuses of connecting to Internet. If evaluated positively, propose new timetable for connection.

Research possible "try-out" approach wherein WELL technical, R&D and senior management staff might arrange for paid connect-time on existing Internet nodes for the purpose of exploring and evaluating its potentials prior to buying-into The WELL's own leased line Internet connection.

Summary

As evidenced in the above draft proposal, the creation and implementation of a well-managed Technical Department for The WELL is a big, but vital task. Even given full commitment to implementation, the process will not be like waving a magic wand over The WELL's technical facilities. A properly organized and prioritized approach to fulfilling the above goals is the key to successful implementation. It will take time. But the result will be a sound foundation on which The WELL can build as it looks forward to continued expansion and profitability. Onward, The WELL!

-- John Hoag (loca)